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From the INTERNATIONAL BUREAU

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 10 December 1999 (10.12.99)	
International application No. PCT/GB99/01329	Applicant's or agent's file reference J00040569 WO
International filing date (day/month/year) 29 April 1999 (29.04.99)	Priority date (day/month/year) 13 May 1998 (13.05.98)
Applicant GHANEA-HERCOCK, Robert, Alan et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
09 November 1999 (09.11.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Olivia RANAIVOJAONA Telephone No.: (41-22) 338.83.38
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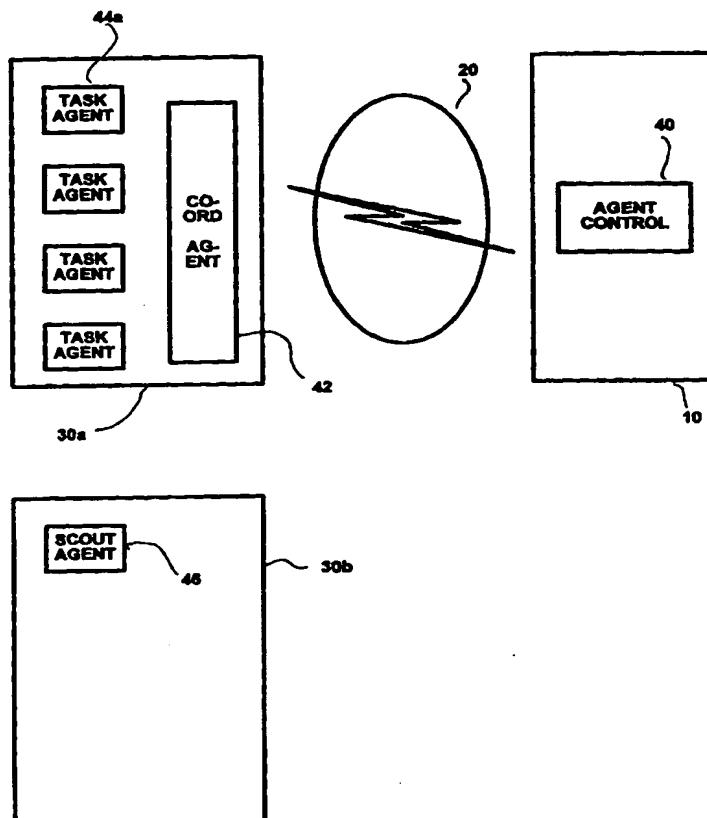
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G06F 9/46		A1	(11) International Publication Number: WO 99/59062
			(43) International Publication Date: 18 November 1999 (18.11.99)
(21) International Application Number: PCT/GB99/01329 (22) International Filing Date: 29 April 1999 (29.04.99) (30) Priority Data: 9810279.1 13 May 1998 (13.05.98) GB 9823714.2 29 October 1998 (29.10.98) GB (71) Applicant (for all designated States except US): BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY [GB/GB]; 81 Newgate Street, London EC1A 7AJ (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): GHANEA-HERCOCK, Robert, Alan [GB/GB]; 140 Dover Road, Ipswich IP3 8JJ (GB). COLLIS, Jaron, Clements [GB/GB]; 11 Goodall Terrace, Kesgrave, Nr. Ipswich, Suffolk IP5 2TX (GB). (74) Agents: MUSKER, David, Charles et al.; R.G.C. Jenkins & Co., 26 Caxton Street, London SW1H 0RJ (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	

(54) Title: REMOTE COMPUTING

(57) Abstract

A method of remote computing comprising supplying a plurality of parallel processing task programs from a first computer to at least one second computer; supplying a co-ordinating program from said first computer to said second computer; and co-ordinating operation of the task programs through the co-ordinating program.



FOR THE PURPOSES OF INFORMATION ONLY

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DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

Inte. Jonal Application No

PCT/GB 99/01329

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F9/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>BERGHOFF J ET AL: "Agent-based configuration management of distributed applications"</p> <p>PROCEEDINGS. THIRD INTERNATIONAL CONFERENCE ON CONFIGURABLE DISTRIBUTED SYSTEMS (CAT. NO.96TB100046), PROCEEDINGS OF INTERNATIONAL CONFERENCE ON CONFIGURABLE DISTRIBUTED SYSTEMS, ANNAPOLIS, MD, USA, 6-8 MAY 1996, pages 52-59, XP002086942</p> <p>ISBN 0-8186-7395-8, 1996, Los Alamitos, CA, USA, IEEE Comput. Soc. Press, USA</p> <p>page 53, right-hand column, paragraph 2 -</p> <p>page 57, right-hand column, paragraph 1</p> <p>---</p> <p>-/--</p>	<p>1-3,5,</p> <p>9-11,</p> <p>13-15,</p> <p>21-23,</p> <p>28,29</p>

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

2 September 1999

Date of mailing of the international search report

09/09/1999

Name and mailing address of the ISA

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Fax: (+31-70) 340-3016

Authorized officer

Fonderson, A

INTERNATIONAL SEARCH REPORT

Inter. Appl. Application No

PCT/GB 99/01329

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>OBJETCSpace INC.: OBJECTSPACE VOYAGER CORE PACKAGE TECHNICAL OVERVIEW, December 1997 (1997-12), XP002086943 http://www.objectspace.com/developers/white/VoyagerTech0view.pdf the whole document</p> <p>----</p>	1-29
A	<p>VOGLER H ET AL: "Using multiple mobile agents for distributed transactions" PROCEEDINGS. 3RD IFCIS INTERNATIONAL CONFERENCE ON COOPERATIVE INFORMATION SYSTEMS (CAT. NO.98EX122), PROCEEDINGS OF THIRD IFCIS CONFERENCE ON COOPERATIVE INFORMATION SYSTEMS (COOPIS'98), NEW YORK, NY, USA, 20-22 AUG. 1998, pages 114-121, XP002086944 ISBN 0-8186-8380-5, 1998, Los Alamitos, CA, USA, IEEE Comput. Soc, USA page 117, right-hand column, paragraph 3 - page 120, left-hand column, paragraph 3</p> <p>-----</p>	1,21,23, 29

REC'D 18 JUL 2000

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference J00040569 WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/01329	International filing date (day/month/year) 29/04/1999	Priority date (day/month/year) 13/05/1998
International Patent Classification (IPC) or national classification and IPC G06F9/46		
Applicant BRITISH TELECOMMUNICATIONS PUBLIC...et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 09/11/1999	Date of completion of this report 14.07.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Thibaudeau. J Telephone No. +49 89 2399 2349 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/01329

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-21 as originally filed

Claims, No.:

1-29 as originally filed

Drawings, sheets:

1/11 - 11/11 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/01329

- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
- ☒ not complied with for the following reasons:
- see separate sheet**
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☒ all parts.
- ☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-29
	No: Claims
Inventive step (IS)	Yes: Claims 1-29
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-29
	No: Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/01329

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1. Reference is made to the following documents:

D1 = "Agent design patterns: elements of agent application design", Aridor and Lange, Proceedings of the Second International Conference on Autonomous Agents, 9-13 May 1998, pages 108-115.

D1 is already cited in the description.

2. **Item IV: Lack of unity of invention**

Claims 1 and 29 relate to a remote computing system comprising a first computer and at least one second computer, said first computer transmitting through a communication link data defining a computing team, said team comprising a first coordinating program and at least one second program for performing at least a part of a task when executed on the second computer.

Claim 21 relates to a remote computing system comprising a first computer and at least one second computer, said first computer transmitting through a communication link mobile program data defining a mobile program for performing at least a part of a task when executed on the second computer, the first computer being arranged to determine whether said second computer can support execution of said mobile program and, if not, to transmit data defining a mobile program support environment to be executed on said second computer.

Claim 23 relates to a remote computing system comprising a first computer and at least one second computer, said first computer transmitting through a communication link mobile program data defining a mobile program for performing at least a part of a task when executed on the second computer, the first computer being arranged to generate a graphical display showing the second computer and each mobile program resident thereon.

Therefore the concept which is common to claims 1 and 29, claim 21 and claim 23 is the transmission of a single program from a first computer to at least one second computer to perform tasks when executed on the second computer and

communicating with the first computer (return of results). This corresponds to the definition of a mobile agent which is disclosed, for example, in D1.
Therefore claims 1 and 29, 21 and 23 are not so linked as to form a single general inventive concept (Rule 13.1 PCT).

3. **Item V: Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

As far as they can be understood (see objections under item VIII), the claims seem to meet the criteria set forth in Article 33(1) PCT with respect to the available prior art.

4. **Item VII: Certain defects in the international application**

i) To meet the requirements of Rule 6.3(b) PCT the independent claims should have been properly cast in the two part form, with those features which in combination are part of the prior art (see document D1) being placed in the preamble.

ii) The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

5. **Item VIII: Certain observations on the international application**

The application does not meet the requirements of Article 6 PCT, because claims 1 and 29 are not clear.

Indeed said claims comprise a coordinating program performing a coordinating operation. Claim 29 only recites that a plurality of tasks programs executed on a second (remote) computer are coordinated. Claim 1 comprises that said coordinating program coordinates each one of said plurality of tasks programs (second program) and communicates with the first computer and with each

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/01329

second program. The role of the coordinating program is therefore not clear. It is clear from the description on page 6, lines 5-18 that this role is essential to the performance of the invention. Since independent claims 1 and 29 do not contain the corresponding features they do not meet the requirement that any independent claim must contain not only all the technical features essential to define the invention but also all the technical features essential to the performance of the invention (see PCT Guidelines, PCT/GL/3, III, 4.3, second and third sentences).

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference J00040569 WO	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 99/ 01329	International filing date (day/month/year) 29/04/1999	(Earliest) Priority Date (day/month/year) 13/05/1998
Applicant BRITISH TELECOMMUNICATIONS PUBLIC...et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

4

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/01329

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F9/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BERGHOFF J ET AL: "Agent-based configuration management of distributed applications" PROCEEDINGS. THIRD INTERNATIONAL CONFERENCE ON CONFIGURABLE DISTRIBUTED SYSTEMS (CAT. NO.96TB100046), PROCEEDINGS OF INTERNATIONAL CONFERENCE ON CONFIGURABLE DISTRIBUTED SYSTEMS, ANNAPOLIS, MD, USA, 6-8 MAY 1996, pages 52-59, XP002086942 ISBN 0-8186-7395-8, 1996, Los Alamitos, CA, USA, IEEE Comput. Soc. Press, USA page 53, right-hand column, paragraph 2 - page 57, right-hand column, paragraph 1 --- -/--	1-3,5, 9-11, 13-15, 21-23, 28,29

☒ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

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Date of the actual completion of the international search

2 September 1999

Date of mailing of the international search report

09/09/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
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Authorized officer

Fonderson, A

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 99/01329

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	OBJECTSPACE INC.: OBJECTSPACE VOYAGER CORE PACKAGE TECHNICAL OVERVIEW, December 1997 (1997-12), XP002086943 http://www.objectspace.com/developers/white/VoyagerTech0view.pdf the whole document ---	1-29
A	VOGLER H ET AL: "Using multiple mobile agents for distributed transactions" PROCEEDINGS. 3RD IFCIS INTERNATIONAL CONFERENCE ON COOPERATIVE INFORMATION SYSTEMS (CAT. NO.98EX122), PROCEEDINGS OF THIRD IFCIS CONFERENCE ON COOPERATIVE INFORMATION SYSTEMS (COOPIS'98), NEW YORK, NY, USA, 20-22 AUG. 1998, pages 114-121, XP002086944 ISBN 0-8186-8380-5, 1998, Los Alamitos, CA, USA, IEEE Comput. Soc, USA page 117, right-hand column, paragraph 3 - page 120, left-hand column, paragraph 3 -----	1,21,23, 29

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"S" document member of the same patent family

Date of the actual completion of the international search

2 September 1999

Date of mailing of the international search report

09/09/1999

Name and mailing address of the ISA

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Fax: (+31-70) 340-3018

Authorized officer

Fonderson, A

INTERNATIONAL SEARCH REPORT

Inter. Appl. No.

PCT/GB 99/01329

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	VOGLER H ET AL: "Using multiple mobile agents for distributed transactions" PROCEEDINGS, 3RD IFCIS INTERNATIONAL CONFERENCE ON COOPERATIVE INFORMATION SYSTEMS (CAT. NO.98EX122), PROCEEDINGS OF THIRD IFCIS CONFERENCE ON COOPERATIVE INFORMATION SYSTEMS (COOPIS'98), NEW YORK, NY, USA, 20-22 AUG. 1998, pages 114-121, XP002086944 ISBN 0-8186-8380-5, 1998, Los Alamitos, CA, USA, IEEE Comput. Soc, USA page 117, right-hand column, paragraph 3 - page 120, left-hand column, paragraph 3	1, 21, 23, 29